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place a sensation in between two others which will seem in absolute value equally distant from each of the other two, or whether we attempt to make the differences of sensation, *i. e.*, the differences of the muscular tensions, alike. In the latter case Weber's law will hold. The law, too, will hold, for the same reason, when the direction of the difference of sensation is perceived, but is not so likely to hold when the bare difference, without a perception of the direction of this difference, is tested.

Interesting and original as this theory is, it cannot be accepted without much experimentation by rigid methods and with due reference to other modes of explanation of the results. It is certainly difficult to conceive that the difference between two pressures or two sounds can be equal in any sense to the differences between the lengths of two lines. What seems to have taken place is this: the weakest and the strongest sensation in each sense were known, as also the number of different sensations in between; the smallest sensation was naturally associated with the shortest length, and the movements of the eyes or the arms having their natural limits, these limits stood for the most intense sensations. The results would then simply show that it is possible to keep in mind these ten sensations or differences of sensation in the disparate spheres of sensation, and make the several intervals or magnitudes correspond roughly each to each. That this power is interesting and worthy of study cannot be doubted, but that it can only be explained by the theory of muscular-tension feelings, or proves this theory, is by no means clear.

J. J.

Sur la perception des radiations lumineuses par la peau chez les Protées aveugles des grottes de la Carniole, RAPHAEL DUBOIS. *Comptes rendus*. T. CX, p. 358, 17 Fév., 1890.

The ocular vision of these creatures is so imperfect that they will run against objects set in their way. They nevertheless perceive the difference between light and darkness, (in part by means of a kind of dermal vision most distinctly marked at certain points about the head and tail), and are profoundly disturbed by the former. In the dark they will remain for a long time in one place, but on being stimulated with a beam of light soon make efforts to escape. This characteristic has been used by Dubois to determine what might be called their reaction-times. In 43 experiments the average time was 11 seconds; in 30, in which the eyes were covered with an opaque mixture, there was reaction in about 24 seconds, except in three cases where there was none at all. With colored lights (produced with colored glass) for which the intensity of the illumination decreased in the order, yellow, blue, red, green, violet, and with the eyes open the following times were found: violet 26 seconds, blue 23, red 16, green 13, yellow 10.5. Where the eyes were covered the results with colored lights were conflicting, probably from too frequent repetitions of the tests. The order of preference of the animals was: black, red, yellow, green, violet, blue, white. The same author has studied the visual ability of the molusk *Pholas dactylus*, see *Comptes rendus*. CIX, pp. 233 and 320.

Experimentelle Studien über den Zeitsinn. MICHAEL EJNER. Inaug. Diss. Dorpat. 1889.

The intervals studied by Ejner were very much larger than those used by most previous experimenters, 0.5, 1, 2, 3, and 4 minutes. The method was that of average error and both forms of it were used: single reproductions, for which the standard is given each time, and multiple or serial reproductions where the standard is only given at the beginning of the series. The time was measured with a stop-watch of some kind,

capable of indicating fifths of a second. During the experiments the subject endeavored to keep himself as much as possible in repose. Ejner himself served as a subject for a large part of the experiments, but a certain number were made on others, including three morbid cases: a neurasthenic, and one each in a maniacal and in depressed condition. His results may be summarized as follows: By the method of single reproductions the estimated time was always too short (least so for the interval of two minutes, both relatively and absolutely); by that of serial reproductions it was too long (most so for the interval of two minutes, absolutely but not relatively), except for the longest interval. The average error by the first method is smaller than by the second in about the proportion of 2 to 3. The average error bears an approximately constant relation to the reproduced interval (not the standard); to this extent the requirements of Weber's Law are fulfilled. The average error is reduced by practice; the estimated time is made shorter by fatigue and longer by practice. The estimation of time depends chiefly on the feelings of inner effort such as accompany the straining of attention on the interval and the like, a result not so far from that of Münsterberg (cf. this JOURNAL, Vol. III, p. 130). In the psychopathic cases the time estimates were less accurate. In a few experiments, made by the method of serial reproduction on a normal subject with intervals of 0.5 and 4 minutes, a metronome was allowed to tick at the rate of 200 per minute, or the subject performed a somewhat elaborate process in mental arithmetic. These showed a greater regularity of estimate than before, and the estimated time was shorter, especially for the shorter interval. The author fails to make mention of the work of Stevens (*Mind*, Oct., 1886), who likewise approached the problem by the method of multiple reproduction, though using shorter intervals.

III.—MORBID PSYCHOLOGY.

RECENT DISCUSSIONS ON PSYCHIATRIC CLASSIFICATION AND NOMENCLATURE.

By WILLIAM NOYES, M. D.

Katatonía. MM. T. SÉGLAS and PH. CHASLIN. *Brain*, July, 1889. (From Archives de Neurologie.)

Séglas and Chaslin have contributed a valuable critical paper on the history of Katatonía, and have summed up our knowledge of this vexed subject fairly and justly. Kahlbaum's monograph, *Die Katatonie* appeared in 1874, and since then there has been much division of opinion, as to whether he had really described a new disease or only a group of symptoms. Kahlbaum tried to define a form of disease in which certain physical, and particularly muscular symptoms accompany (as in general paresis, and as frequently) certain psychical phenomena, and play a leading part in the whole morbid closely process. This new form of mental derangement may be allied to melancholia attonita, which is ordinarily considered a distinct disease. On careful examination of the latter disease, we can very often, according to Kahlbaum, discover at the onset, epileptiform seizures or other manifestations of spasmodic attacks. These conditions become permanent, attain their greatest development in the *flexibilitas cerea* stage of the mental condition, and merge into the final stage of dementia. These symptoms are by their importance placed in a line with the paralytic phenomena of general paralysis. By their side, and in addition to the usual symptoms of melancholia attonita, we find other physical, and more especially psychical phenomena, notably a particu-